Stroboscope

Build a device to create the illusion of movement.

Kit contains:

- disk template
- cardstock
- 1 push pin

You will need: scissors, glue, a pencil with an eraser, and a big mirror.

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INSTRUCTIONS

Step 1. Glue the disk template (with the horses) to the cardstock.

Step 2. Cut out the circle through both layers and the 10 skinny black rectangles.

Step 3. Poke the push pin through the dot in the center of the disk and into the eraser of your pencil. Your stroboscope is complete!

Step 4. Stand in front of a mirror. Hold your stroboscope by the pencil handle in front of your face. The pictures should be facing the mirror. Look through one of the slits and focus on the image of one horse. Spin the disk and watch the horse gallop!

WHAT'S GOING ON?

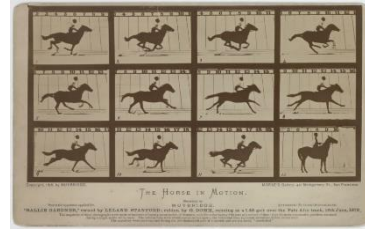
As the disk rotates, a series of open slits moves rapidly past your eye. Each time a slit passes your eye, you see a glimpse of the scene on the far side of the disk. Each open-slit image stays in your eye and brain long enough to merge with the next image. This phenomenon, called **persistence of vision**, can combine the glimpses in such a way that your brain perceives continuous motion.

Animation also works because of persistence of vision. The human eye and brain can only process 10 to 12 separate images per second. The Disney movie *Encanto* is 24 frames per second: it switches through 24 different still pictures in every second to create the illusion of smooth movement.

Sources: exploratorium.edu/snacks/whirling-watcher
disneyanimation.com/process/

“THE HORSE IN MOTION”

The pictures of a galloping horse on your stroboscope are inspired by an 1878 work by photographer Eadweard Muybridge. There was a big dispute at the time over whether or not all four legs of a horse left the ground at the same time while running. Muybridge used cutting-edge photography of a horse named Sally Gardner to prove that they did. He created an animation effect with these pictures in a **zoetrope** (left) and later with an early projector called a **zoogyroscope**, which caused people to marvel.



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